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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,484	01/10/2001	Joseph C. Chan	80398.P347	9336

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EXAMINER
PEZZLO, JOHN

ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-36* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-36* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some *   c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 5 and 11 and 24 are objected to because of the following informalities:

1.   Regarding claims 5 and 11 - Claims 5 and 11 do not end in a period.

2.   Regarding claim 24 – Claim 24 needs to depend from claim 23, since claim 24 is directed

to a predetermined number of requests and claim 23 is directed to the same subject matter.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

I.   Claims 17 and 20 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 17, Line 7 and claim 20, line 5 and claim 22, line 7

states "selected RLP packet" which is confusing since the station has requested a packet-size it

would appear a packet-size would be returned as part of a returned message.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed
in the United States before the invention by the applicant for patent or (2) a patent granted on an application for
patent by another filed in the United States before the invention by the applicant for patent, except that an
international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this
subsection of an application filed in the United States only if the international application designated the United
States and was published under Article 21(2) of such treaty in the English language.

II.   Claims 1-3, 5, 7, 8, 9, 11, 13, 14, 15, 16, and 19 are rejected under 35 U.S.C. 102(e) as

being anticipated by Ahmadvand et al. (US 6,542,490) hereinafter Ahmadvand.

1.   Regarding claims 1, 7, and 13 - Ahmadvand discloses generating a metric to indicate a

channel condition, processing the metric to determine optimal packet-size for the channel

condition, and choosing the optimal packet-size corresponding to the processed metric to send to

a requestor, refer to Figures 4 and 5 and column 1 lines 48 to 64 and column 7 lines 44 to 56 and

column 8 lines 1 to 22.

2.   Regarding claims 2, 8, and 14 – Ahmadvand discloses receiving the metric corresponding

to the channel condition and using the received metric to balance a trade-off between the cyclic

redundancy check and re-transmission overhead, refer to Figures 4 and 5 and column 7 lines 56

to 67 and column 8 lines 1 to 23 and column 8 lines 56 to 67 and column 9 lines 1 to 8.

3.   Regarding claims 3, 9, and 15 – Ahmadvand discloses wherein choosing the optimal

packet further includes training a neural network or look-up table to optimally improve system

data throughput by selecting a packet corresponding to the channel condition, refer to Figures 3-5 and column 4 lines 1 to 20 and column 7 lines 27 to 56.

4.   Regarding claims 5 and 11 and 16 and 19 – Ahmadvand discloses wherein the metric being a frame error rate, refer to column 1 lines 53 to 65.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

III.   Claims 4, 6, 10, 12, 17, 18, 20, 21, 23, 24, and 25-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmadvand (same as above).

1.   Regarding claims 4 and 10 – Ahmadvand discloses a wireless system, which utilizes the RLP and based on link conditions (BER, number of retransmissions, number of frame errors) the system will dynamically change the size of the packets.

Ahmadvand does not expressly disclose wherein the optimal packet size being a packet-size that minimizes both cyclic redundancy check and retransmission overhead.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to select the optimal packet size that minimizes both the cyclic redundancy check and retransmission overhead. The suggestion/motivation for doing so would have been that Ahmadvand discloses an ARQ method and selecting a CRC and segmenting the frame into packets to reduce the number of retransmissions, refer to Figures 4 and 5 and column 7 lines 44 to 56 and column 8 lines 55 to 67. The benefit being that the reducing the size of the CRC and limiting the number of retransmissions will maximize the throughput of the radio channel and allow for higher data rates or more users to share the channel.

2.   Regarding claims 6 and 12 - Ahmadvand discloses a wireless system, which utilizes the RLP and based on link conditions (BER, number of retransmissions, number of frame errors) the system will dynamically change the size of the packets. Ahmadvand discloses basing the packet size on line conditions, refer to column 4 lines 1 to 20.

Ahmadvand does not expressly disclose wherein the metric being a function of a packet error rate selected from a group consisting of frame error rate (FER), signal to noise ratio estimate (SNR), energy per bit (Eb) / Thermal noise (Nt) estimate, and system time or finger time drift rate.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to select the packet the size as a function of frame error rate (FER), signal to noise ratio estimate (SNR), energy per bit (Eb) / Thermal noise (Nt) estimate, and system time or finger time drift rate. The suggestion/motivation being that Ahmadvand discloses that the link varies

over time based on a number of conditions (refer to column 2 lines 60 to 67) therefore basing the

metric as a function of the above conditions will further optimize the channel throughput.

3.   Regarding claims 17 and 18 and 20 and 21 and 23 and 24 - Ahmadvand discloses a

wireless system, which utilizes the RLP and based on link conditions (BER, number of

retransmissions, number of frame errors) the system will dynamically change the size of the

packets.

Ahmadvand does not expressly disclose allowing a base station or mobile data

transmission system to request a change for the RLP packet-size and selecting a RLP packet

from a predetermined table that corresponds in size to the size requested by the base station or

mobile data transmission system and sending the selected RLP packet-size to the base station or

mobile data transmission system and limiting the number of requests to a predetermined number

of requests.

At the time of the invention, it would have been obvious to a person of ordinary skill in

the art to request (and request a number of times) for a different packet-size depending on the

channel conditions. The suggestion/motivation for so would have been that Ahmadvand

discloses a new modification to the RLP protocol to be completed in the layer 2 stack (MAC and

LLC) (refer to Figure 3 and column 6 lines 45 to 67) and Ahmadvand discloses a new ARQ

procedure for normal or burst operation (refer to column 8 lines 55 to 62) and since the channel

is asymmetrical either the base or mobile could be having problems and the other side (receiver)

would notice so that the receiver should request the new updated packet-size. The benefit being

that either mobile or base can request a new packet-size based on the receive conditions for the
channel.

4.   Regarding claims 25, 29, and 33 - Ahmadvand discloses a wireless system, which utilizes
the RLP and based on link conditions (BER, number of retransmissions, number of frame errors)
the system will dynamically change the size of the packets. Ahmadvand discloses storing at least
one radio link protocol (RLP) packet in a physical layer, refer to Figure 3 and column 6 lines 46
to 67.

Ahmadvand does not expressly disclose predetermining the RLP packet-size by empirical
experimentation.

At the time of the invention, it would have been obvious to a person of ordinary skill in
the art to predetermine the RLP packet-size by empirical experimentation. The
suggestion/motivation for doing so would have been that Ahmadvand discloses that the channel
varies according to many factors and utilizing empirical experimentation might be the easiest
way to establish the look-up table. The benefit being that the above approach would be the most
optimum under the circumstances.

5.   Regarding claims 26, 30, and 34 - Ahmadvand discloses a wireless system, which utilizes
the RLP and based on link conditions (BER, number of retransmissions, number of frame errors)
the system will dynamically change the size of the packets.

Ahmadvand doe not expressly disclose simulating a condition with a particular metric value and adjusting packet-size manually corresponding to the metric value and recording packet-size data for the metric value to obtain maximum system throughput.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to simulate a condition with a particular metric value and adjusting packet-size manually corresponding to the metric value and recording packet-size data for the metric value to obtain maximum system throughput. The suggestion/motivation for doing so would have been that the error rate is based on a number of radio link conditions, refer to column 8 lines 10 to 15. Therefore, adjusting the packet-size manually based on the metric would allow the system to generate and verify the look-up table based on a limited and controlled set of conditions. The benefit being that the results would be verified prior to putting the algorithm into practice.

6.   Regarding claims 27, 31, and 35 - Ahmadvand discloses wherein choosing the optimal packet further includes a look-up table to optimally improve system data throughput by selecting a packet corresponding to the channel condition, refer to Figures 3-5 and column 4 lines 1 to 20 and column 7 lines 27 to 56.

7.   Regarding claims 28, 32, and 36 – Ahmadvand discloses wherein the RLP packet includes cyclic redundancy check bits to provide error-checking capability for the RLP packet, refer to Figure 4 and column 3 lines 5 to 15 and column 5 lines 32 to 42 and column 8 lines 1 to 22.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

1.   Qaddoura discloses a method and system for transmission control protocol (TCP) packet loss recovery over a wireless link.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Pezzlo whose telephone number is (703) 306-5420. The examiner can normally be reached on Monday to Friday from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou, can be reached on (703) 305-4744. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

Any response to this action should be mailed to:

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Washington, D.C.

or faxed to:

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For informal or draft communications, please label "PROPOSED" or "DRAFT"

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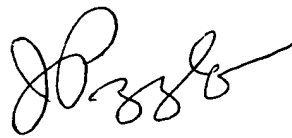
2121 Crystal Drive

Arlington, VA.

John Pezzlo

15 July 2004

JOHN PEZZLO
PRIMARY EXAMINER